

# Submittal Comments

**Item No:** 230700.01  
**(CSI No:)**

**Item**  
**Descript:** HVAC Insulation

**Re:** **Submittal** Comments  
**Cascade Science** Lab Renovation  
**2008-046.CSL** 8.3

*Architecture*  
*Engineering*  
*Technology*  
*Interior Design*  
*Landscape Architecture*

*Wil-Fra-Mar Building*  
*320 East Vermont Street*  
*Indianapolis IN 46204-1640*  
*317.263.6226*  
*317.263.6224 (fax)*  
*www.schmidt-arch.com*

Reviewed and checked only for conformance with design concepts and with the information given in the Contract Documents. Approval does not release the Contractor from the responsibility to provide appropriate quantities, field measurements, dimensional stability, installation, anchorage, and coordination with other trades or release the Contractor from responsibility for deviations from the requirements of the Contract Documents or from responsibility for errors and omissions contained thereon.

	Reviewed as Submitted - No Resubmittal Required.
XX	Reviewed as Noted - No Resubmittal Required.
	Reviewed as Noted - Revise and Resubmit.
	Rejected - Revise and Resubmit.
	Not Required for Review - Returned.
By: Lennie Brim	
Date: May 6, 2009	

## Comments

1. Provide insulation thicknesses as specified on all systems

Copy: File



# POLYCO 25/50 Smoke Safe™ PVC

## POLYCO 25/50 Smoke Safe™ PVC Fitting Covers and Jacketing

**Description:**

The Polyco Smoke Safe™ PVC Insulated Fitting Covering System consists of preformed gloss white outdoor weatherable and gloss colored insulated covers for piping fittings. Their unique shapes fit screwed, Victaulic®, welded and flanged elbows, tees, valves, couplings, laterals, reducers and end caps.

The Polyco Smoke Safe™ PVC Jacketing System consists of gloss white outdoor weatherable and colored PVC sheet in either bulk rolls or precurled cut-to-fit pipe sizes. The Jacketing is available in .010", .015", .020", and .030" thicknesses.

The Jacketing and Fitting Covering Systems include solvent weld adhesives, stainless steel tack fasteners, silicone caulking and adhesive tapes.

A die-cut multi-temperature fiberglass insulation insert is available and sized for a full insulation over the exposed pipe fitting and under the overlay of the PVC Fitting Cover.

The Polyco Smoke Safe™ PVC Systems are designed to cover pipe fittings and other mechanical equipment from an outside diameter of 1-5/8" to 24" in accordance with ASTM C-585.

**Code Compliance:**

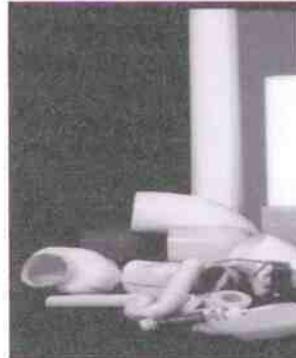
Polyco Smoke Safe™ PVC Fitting Covers and Jacketing meet:

Military Specification LP-1035A, Type II Grade GU and Type III, and LP-535E, Type II Grade GU and Type III. Federal Specification HH-I-558, Form B, Type I Class B. Requirements of USDA and FDA for use in facilities of the food processing, beverage and pharmaceutical industries.

**Advantages:**

The ease of installing Polyco Smoke Safe™ PVC Fitting Covers and Jacketing assures a uniform, neat, attractive insulation of piping fittings and other mechanical piping equipment. The high gloss PVC surface provides a cleaner, neater appearance; its surface remains more maintainably clean and highly corrosion resistant. Its outdoor weatherability (UV stable) provides greater flexibility of usage. The 25/50 fire class of all Polyco Smoke Safe™ Products provides greater universal building code acceptance. Polyco Smoke Safe™ PVC Fitting Covers and Jacketing provide a natural barrier to moisture, bacteria and mold; their unique shapes make an easy seal over an entire mechanical system.

**Applications:** Polyco Smoke Safe™ PVC Insulated Fitting Covers and Jacketing are designed for applications indoors



**K.P. MEIRING CO** *KPM*  
 CHECKED BY: \_\_\_\_\_  
 DATE CHECKED: 4/15/09  
 REVIEWED NO EXCEPTIONS: \_\_\_\_\_ XX  
 REVIEWED WITH EXCEPTIONS: \_\_\_\_\_  
 REJECTED RESUBMIT: \_\_\_\_\_

The review is only for general conformance with design concepts given in the contract documents. Subcontractor is responsible for dimensions, quantities, coordination with other trades and performing his work in a safe manner. No change to contract requirements is intended.

or out-of-doors in commercial, institutional and industrial facilities. The system has an applicable temperature range of -35°F to 500°F (-37°C to 260°C). The PVC surface should remain below 150°F (66°C) through the installation of sufficient insulation on higher temperature applications.

• Colored Fitting Covers and Jacketing are not recommended for outdoor usage.

**Physical Properties: Polyco Smoke Safe™ PVC:**

Property	Test Method	Value
Flame Spread	ASTM E84	25 or less
Smoke Developed	ASTM E84	50 or less
Specific Gravity	ASTM 792	1.46
Tensile Strength	ASTM D638	7,000
@ yield lb./in. <sup>2</sup>		
Tensile Modulus	ASTM D638	400,000
PSI		
Izod Impact-ft.lb./in.	ASTM D256	15.0
Electrical	ASTM D257	None
Conductance		

**Physical Properties: Fiberglass Insulation**

Property	Test Method	Value
Flame Spread	ASTM E84	25 or less
Smoke Developed	ASTM E84	50 or less
Thermal Conductivity	ASTM C177	0.26
(75°F/24°C)		

## Specification Data:

### Hot Systems:

All piping fittings shall be insulated by filling the total void over all fittings, between straight runs of pipe insulation, with Polyco die-cut fiberglass insulation, forming a uniform insulation thickness equal to or exceeding the adjacent pipe insulation. Finish all insulated pipe fittings by applying Polyco Smoke Save PVC Fitting Covers overlapping the adjacent pipe insulation outer covering. Secure the Polyco Fitting Covers with Polyco Stainless Steel Tack Fasteners, Polyco PVC Tape or by Welding PVC overlaps with Polyco Vinyl Adhesive. Caution should be exercised to be sure that the insulation surface temperature is maintained below 150°F (66°C) through the application of sufficient insulation under all PVC Covering.

### Cold Systems:

All piping fittings shall be insulated by filling the total void over all pipe fittings between straight runs of pipe insulation with Polyco die-cut fiberglass insulation, forming a uniform insulation thickness equal to, or exceeding, the adjacent pipe insulation. Finish all insulated pipe fittings by applying Polyco Smoke Safe PVC Fitting Covers overlapping the adjacent pipe insulation outer covering. The overlap of the throat of the PVC Fitting Cover and the ends of the Fitting Cover overlapping the adjacent pipe insulation vapor barrier jacketing shall be vapor sealed with compatible vapor barrier mastic. The ends of the PVC Fitting Cover overlapping the pipe insulation shall be further sealed by an outer wrapping of Polyco PVC Tape extending over the adjacent pipe insulation vapor barrier jacketing and overlapping its own juncture by at least two inches in the downward direction on the downward side.

## Chemical Resistance:

### Inorganic Acids:

Sulfuric, Nitric, hydrochloric, hydrofluoric      Excellent

(diluted or concentrated):

### Organic Acids:

Formic, acetic and propionic      Poor

### Alkalies:

Sodium and potassium hydroxides      Excellent  
Ammonium hydroxide      Excellent  
Caustic Soda      Excellent  
Soda Ash      Excellent

### Miscellaneous Corrosive Chemicals:

Phenol, resorcinol and creosol      Poor  
Iodine, crystals      Fair  
Iodine, tincture      Excellent  
Chlorine and bromine water      Excellent  
Potassium dichromate      Excellent  
Silver nitrate      Excellent  
Tannic acid      Excellent

### Solvent and Dilutents:

Alcohol and polyalcohols, including ethyl methanol, butanol and isopropyl alcohol      Excellent

### Ketones:

Lower boiling ketones      Dissolves  
Higher boiling ketones      Swells

### Ethers:

Ethyl      Softens  
Dichlorethyl ether      Swells  
Diethyl cellosolve      Swells  
Dioxane      Dissolves  
Propylene oxide      Dissolves

### Hydrocarbons:

Aromatics as gasoline, kerosene and petroleum oils      Excellent

### Oils, Fats and Waxes:

Animal, mineral and vegetable      Excellent



- SSL II® All-Service Jacket (ASJ), Self-Sealing Lap**
- SSL® I ASJ**
- No-Wrap**

**Description**

Owens Corning Fiberglas® pipe insulations are molded of heavy density resin bonded inorganic glass fibers. These one-piece, 36" (914mm) long, hinged sections are opened, placed over the pipe, closed and secured by means specific to the type as described below.

*Fiberglas* SSL II® Pipe Insulation is jacketed with a smooth, reinforced, wrinkle-resistant all-service (ASJ) vapor retarder jacket. Factory applied DOUBLESURE† double pressure sensitive adhesive closure provides positive mechanical and vapor sealing of the longitudinal jacket seam. Pressure sensitive butt strip seals complete the positive closure. Available in the most popular sizes.

In larger sizes *Fiberglas* Pipe Insulation is furnished with SSL® I, a single adhesive lap seal.

*Fiberglas* "No-Wrap" Pipe Insulation is also available without a jacket. It is intended for field installation of jacketing appropriate to the vapor control, damage or corrosion resistance requirements of the application.

**Uses**

Insulation of hot, cold, concealed and exposed piping operating at temperatures from 0°F (-18°C) to 850°F (454°C) in commercial buildings, industrial facilities and process or power plants.

†DOUBLESURE is a registered trademark of Morgan Adhesives Company.

**Features/Benefits**

**SSL II Positive Closure System**

Effective long-term vapor sealing of both longitudinal and butt joints. With double-adhesive lap seal, plus two-part butt strip seal, positive closure is fast, neat and foolproof. No need for staples and mastic, promoting unexcelled jobsite productivity.

**Jacket and Lap Shipped Adhered**

Short pieces of insulation can be cut without jacket loss; it won't come apart in handling. No "dog-ears" in or out of the carton. Dust and

moisture can't reach the seal. Butt strips come in sealed bags inside the carton, staying clean until the moment of use.

**Excellent Thermal Performance**

*Fiberglas* Pipe Insulation's low thermal conductivity contributes to lower operating costs of heating and cooling equipment.

**Meets Model Code Fire Ratings**

Flame spread rating of 25 or less, and smoke developed rating of 50 or less, usually means that *Fiberglas* Pipe Insulation will be granted immediate building code approval.

**Availability**

Fiberglas Pipe Insulations are available in thicknesses and for pipe sizes as follows:

Insulation Thickness, in. (mm)	Nominal Pipe Sizes, NPS, in. (DN, mm)					
	SSL II Pipe Insulation		SSL I* Pipe Insulation*		No-Wrap** Pipe Insulation**	
1/2 (13)	1/2-6	(15-150)			1/2-6	(15-150)
1 (25)	1/2-15	(15-375)	16-33	(400-825)	1/2-33	(15-825)
1 1/2 (38)	1/2-14	(15-350)	15-33	(375-825)	1/2-33	(15-825)
2 (51)	1/2-12	(15-300)	14-33	(350-825)	1/2-33	(15-825)
2 1/2 (64)	2-11	(50-275)	12-26	(300-650)	1/2-32	(15-800)
3 (76)	3-10	(75-250)	11-26, 30	(275-650, 750)	1/2-31	(15-900)
3 1/2 (89)	4 1/2-9	(115-225)	10-18, 20-22, 24	(250-450, 500-550, 600)	1/2-30	(15-750)
4 (102)	4 1/2-8	(115-200)	9-21, 24, 25	(225-525, 600, 625)	1/2-29	(15-725)
4 1/2 (114)	6-7	(150-175)	8-10, 12, 14, 16, 18, 20, 24	(200-250, 300, 350, 400, 450, 500, 600)	1/2-28	(15-700)
5 (127)	6	(150)	7-14, 16-24	(175-350, 400-600)	1/2-27	(15-675)
5 1/2 (140)					6-26	(150-650)
6 (152)					6-25	(150-625)

\* SSL I all made-to-order except 14" x 2" (350mm x 51mm) and 16" x 1", 11/2" and 2" (400mm x 25mm, 38mm and 51mm).  
\*\* Consult Packaging Data Supplement (PP1 P5) available upon request for standard and made-to-order sizes.

**Specification Compliance**

- ASTM C 547, Mineral Fiber Pre-Formed Pipe Insulation, Type I to 850°F (454°C)
- ASTM C 1136, Flexible Low Permeance Vapor Retarders for Thermal Insulation: All Types
- ASTM C 795, Thermal Insulation for Use Over Austenitic Stainless Steel\*
- Mil. Spec. MIL-I-22344D, Insulation, Pipe, Thermal, Fibrous Glass
- Nuclear Regulatory Commission Guide 1.36, Non-Metallic Thermal Insulation\*
- U.S. Coast Guard Approval No. 164.009, Noncombustible Materials (no-wrap)
- New York City MEA No. 344-83
- CAN/CGSB-51.9 – Type 1, Class 2
- NFPA 90A

\* Preproduction qualification testing complete and on file. Chemical analysis of each production lot required for total conformance.

# Fiberglas® Pipe Insulation

## Physical Property Data

Property	Test Method	Value
Operating temperature range	ASTM C 411	0 to 850°F* (-18°C to 454°C)*
Jacket temperature limitation	ASTM C 1136	-20°F to 150°F (-29°C to 66°C)
Jacket permeance	ASTM E 96, Proc. A	0.02 perm
Puncture resistance	ASTM D 781	50 units
Composite surface burning characteristics	UL 723,** ASTM E 84** or CAN/ULC-S102-M**	Flame spread 25** Smoke developed 50

\* Limited to single layer applications above 650°F (343°C), but not greater than 6" (152mm) thickness.

\*\* The surface burning characteristics of these products have been determined in accordance with UL 723, ASTM E 84 or CAN/ULC-S102-M. These standards should be used to measure and describe the properties of materials, products or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use. Values are reported to the nearest 5 rating.

## Thermal Performance, ASTM C 680

Insulation NPS x Thk. (DN x Thk.) in. mm	Pipe Operating Temperature, °F (°C)					
	300 (149)		500 (280)		700 (371)	
	HL	ST	HL	ST	HL	ST
2 x 1/4 (50 x 13)	77 (74)	128 (53)				
4 x 1 (100 x 25)	78 (75)	109 (43)				
8 x 1 (200 x 25)	140 (135)	112 (44)				
12 x 1 (300 x 25)	199 (191)	113 (45)				
2 x 1/2 (50 x 38)			88 (85)	116 (47)		
4 x 1/2 (100 x 38)			142 (137)	123 (51)		
8 x 1/2 (200 x 38)			242 (233)	128 (53)		
12 x 1/2 (300 x 38)			330 (317)	129 (54)		
2 x 2 (50 x 51)					139 (134)	127 (53)
4 x 2 1/2 (100 x 64)					188 (181)	125 (52)
8 x 2 1/2 (200 x 64)					295 (284)	129 (54)
12 x 3 (300 x 76)					359 (345)	125 (52)

Heat Loss (HL), Btu/hr·ft (W/m); Surface Temperature (ST), °F (°C).  
Design Conditions: Horizontal piping, 80°F (27°C) average ambient temperature, 0 mph wind speed, ASJ jacket.

## Thickness to Prevent Surface Condensation

Owens Corning ASJ Jacket for up to 16" NPS (400mm DN)<sup>(1)</sup>, in. (mm)

Ambient Temperature, °F (°C)	Relative Humidity <sup>(2)</sup>	System Operating Temperatures					
		35°F (2°C)		45°F (7°C)		55°F (13°C)	
110 (43)	50%-70%	1	(25)	1	(25)	1	(25)
	80%	1 1/2	(38)	1 1/2	(38)	1	(25)
	90%	3 1/2	(89)	3	(76)	2 1/2	(64)
100 (38)	50%-70%	1	(25)	1	(25)	1	(25)
	80%	1 1/2	(38)	1 1/2	(38)	1	(25)
	90%	3	(76)	3	(76)	2 1/2	(64)
90 (32)	50%-70%	1	(25)	1	(25)	1	(25)
	80%	1 1/2	(38)	1	(25)	1	(25)
	90%	3	(76)	2 1/2	(64)	2	(51)
80 (27)	50%-80%	1	(25)	1	(25)	1	(25)
	90%	2 1/2	(64)	2	(51)	1 1/2	(38)
	50%-80%	1	(25)	1	(25)	1	(25)
70 (21)	90%	1 1/2	(38)	1 1/2	(38)	1	(25)

- (1) For NPS (DN) greater than 16" (400mm), please contact your local Owens Corning Representative.  
(2) If humidity exceeds 90%, some condensation is to be expected; therefore, a coating of a mastic or PVC jacket overwrap is recommended as repeated or continual wetting of the ASJ jacket will degrade its vapor retarder performance.



## OWENS CORNING WORLD HEADQUARTERS

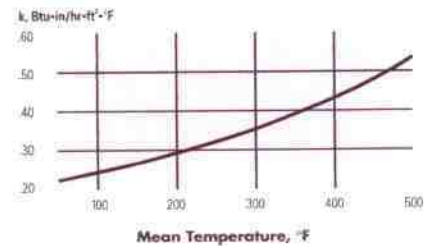
ONE OWENS CORNING PARKWAY  
TOLEDO, OHIO, USA 43659

1-800-GET-PINK  
www.owenscorning.com

Fiberglas,® SSL II® and SSL® are registered trademarks of Owens Corning.

Pub. No. 5-IN-20547-D Printed in USA, June 2001 Copyright © 2001 Owens Corning.

## Thermal Conductivity



Apparent thermal conductivity curve determined in accordance with ASTM Practice C 1045 with data obtained by ASTM Test Method C 335. Values are nominal, subject to normal testing and manufacturing tolerances.

Mean Temp. °F	k Btu-in/hr-ft²-F	Mean Temp. °C	λ W/m·°C
50	0.22	10	0.032
75	0.23	25	0.034
100	0.24	50	0.037
150	0.27	100	0.043
200	0.29	125	0.047
250	0.32	150	0.051
300	0.35	175	0.056
350	0.39	200	0.062
400	0.43	225	0.068
450	0.48	250	0.075
500	0.54	275	0.082

## Application Recommendations

The hinged sections of *Fiberglas* Pipe Insulation are opened, placed over the pipe, carefully aligned, and sealed or jacketed as required by the form of the insulation and the application.

*Fiberglas* SSL II Pipe Insulation is shipped with the jacket and longitudinal lap closed, the two adhesives separated by a release strip. The insulation is opened by pulling the release strip from between the two adhesive strips. The insulation is placed on the pipe, carefully aligned, and the two adhesives rubbed firmly together to close and seal. The two part butt strip seal completes the positive closure. Application may be at ambient temperatures from 25°F (-4°C) to 110°F (43°C).

*Fiberglas* "No-Wrap" Pipe Insulation is designed for field-jacketing with pipe covering secured by wires or bands, vapor sealed where required.

Outdoor applications must be protected from weather. If painting is required, use only water base latex paint.



## Submittal Sheet

# SoftTouch™ Duct Wrap Insulation

CONTRACTOR NAME \_\_\_\_\_

JOB NAME \_\_\_\_\_

DATE \_\_\_\_\_

Please check the appropriate products below:

Unfaced Duct Wrap

Vinyl Duct Wrap

FSK-Faced Duct Wrap

## TECHNICAL DATA

Standard and Wide Tab Duct Wrap Physical Properties		
PROPERTIES	PERFORMANCE	TEST METHOD
Operating Limits: Temperature	Unfaced: 35-350°F (1.7-177°C) Faced: 35-250°F (1.7-121°C)	ASTM C 411
Surface Burning Characteristics (Fire Hazard Classification)	Maximum: Flame Spread Index: 25 Smoke Developed Index: 50	NFPA 255 UL 723 ASTM E 84 CAN/ULL-S102-M88
Water Vapor Sorption	<5% by Weight	ASTM C 1104
Water Vapor Transmission (Facing only)	FSK: 0.02 perms Vinyl: 1.3 perms	ASTM E 96, Dessicant Method
Corrosion Resistance	Pass	ASTM C 665
Fungi Resistance	Pass	ASTM C 1338
Odor Emission	Pass	ASTM C 1304
Noncombustible	Pass (insulation only)	ASTM E 136

Model Building Codes: (BOCA, ICBO, SBCCI, ICC, NFPA)

This Submittal Form is provided to assist you in specifying and selecting the proper CertainTeed Insulation product. Basic product descriptions and performance data are included. For further information or technical assistance, contact your local CertainTeed representative.

Product	Description	Product		K-Value		C-Value		R-Value		Installed R-Value	
		Type	Thickness	Btu·in	W	Btu	W	h·ft <sup>2</sup> ·°F	m <sup>2</sup> ·°C	h·ft <sup>2</sup> ·°F	m <sup>2</sup> ·°C
			in mm	h·ft <sup>2</sup> ·°F	m <sup>2</sup> ·°C	h·ft <sup>2</sup> ·°F	m <sup>2</sup> ·°C	Btu	W	Btu	W
Duct Wrap Insulation	Duct Wrap is a blanket-type insulation composed of glass fibers bonded together with a thermosetting resin. It is available unfaced or with FSK or vinyl-film vapor retarder facings. On faced products, a 2" (51mm) stapling/taping tab is provided on one edge. Wide Tab Duct Wrap, with a 2½" (64mm) wide stapling/taping tab, is also available with FSK facing only.	75	1 25	0.26	0.037	0.26	1.48	3.8	0.67	3.0	0.53
		75	1½ 38	0.29	0.042	0.19	1.10	5.2	0.92	4.2	0.74
		75	2 51	0.29	0.042	0.15	0.82	6.9	1.22	5.7	1.00
		75	2½ 54	0.29	0.042	0.14	0.77	7.3	1.29	6.0	1.06
		75	2½ 57	0.29	0.042	0.13	0.73	8.0	1.41	6.5	1.15
		75	2½ 64	0.29	0.042	0.12	0.66	8.6	1.52	7.1	1.25
		75	3 76	0.29	0.042	0.10	0.55	10.4	1.83	8.5	1.50
		100	1 25	0.26	0.037	0.26	1.48	3.8	0.67	3.0	0.53
		100	1½ 38	0.26	0.037	0.17	0.98	5.7	1.00	4.5	0.79
		100	2 51	0.26	0.037	0.13	0.74	7.6	1.34	6.1	1.07
		150	1½ 38	0.24	0.035	0.16	0.91	6.2	1.09	4.8	0.85
		150	2 51	0.24	0.035	0.12	0.68	8.3	1.46	6.4	1.13

### Applicable Standards

Complies with:

– ASTM C 1290

Type I – Unfaced

Type II – Vinyl faced

Type III – FSK-faced

– ASTM C 553

Type I – Type 75, 100 and 150

Type II – Type 100 and 150

– CAN/CGSB-51.11-92

– ASTM C 1136, Type II, FSK Facing

– Thermal performance determined by ASTM C 177 and/or ASTM C 518.

CertainTeed Corporation, P.O. Box 860, Valley Forge, PA 19482

**1-800-233-8990**

Visit our web site at: <http://www.certainteed.com> • Fax-on-Demand service: 1-800-947-0057

Customer Service 1-800-441-9850 • Fax 1-800-799-2381

CertainTeed was the first fiber glass insulation manufacturer to have all its manufacturing plants, R&D center and corporate headquarters registered to ISO 9001-2000 standards.

